



# CONSUMER DECISION MAKING

Categories & Descriptions



**2017-2018**

# Consumer Decision Making

## Study Guide ~ Additional Resources

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## ATHLETIC SHOES

With the many types of athletic shoes that are available, it can be hard to choose the right shoes for you. There are differences in design and variations in material and weight. The American Academy of Orthopedic Surgeons says that these differences have been developed to protect the areas of the feet that encounter the most stress in a particular athletic activity. Let's review some of the different types of sports shoes available.

### Athletic shoes

- Are grouped into the following categories: running, training, and walking; they include shoes for hiking, jogging, and exercise walking. These shoes should have a comfortable soft upper, good shock absorption, smooth tread, and a rocker sole design that encourages the natural roll of the foot during the walking motion. Features of a good jogging shoe should include cushioning, flexibility, control, and stability in the heel counter area, lightness, and good traction. Whereas, cross-training shoes combine several characteristics of other types of shoes so that you can participate in more than one sport and wear the same shoe. A good cross trainer should have flexibility in the forefoot that you need for running, in addition to stability on the inside and outside of the shoe for the control needed for aerobics and tennis. Walking shoes should flex easily at the ball of the foot, which help feet to push forward.

### Court sport shoes

- Include shoes for tennis, basketball, and volleyball. Most court sports require the body to move forward, backward, and side-to-side. As a result, most athletic shoes used for court sports are subjected to heavy abuse. The key to finding a good court shoe is the sole. Ask a coach or shoes salesperson to help you select the best type of sole for your sport.

### Field sport shoes

- Include shoes for soccer, football, and baseball. These shoes are cleated, studded, or spiked. The spike and stud formations vary from sport to sport, but they generally are replaceable or detachable cleats, spikes, or studs affixed into nylon soles.

### Track and field sport shoes

- Are very specific to the sport. The needs of the individual are most important when picking the shoe. For example, foot types, gait patterns, and training styles should always be considered. It is always best to ask a coach about the type of shoe that should be selected for the event in which you are participating. Proper-fitting sports shoes can enhance performance and prevent injuries. Follow these specially designed fitting facts when purchasing a new pair of athletic shoes:
  - Try on athletic shoes after a workout or run and at the end of the day. Your feet will be at their largest.
  - Wear the same type of sock that you will wear for that sport.
  - When the shoe is on your foot, you should be able to freely wiggle all of your toes. There should be a thumb's width from the tip of the toe to the end of the shoe.
  - The shoes should be comfortable as soon as you try them on. There is no break-in period. If they're not comfortable in the store, they won't be comfortable when you're exercising.
  - Walk or run a few steps in the shoes. They should be comfortable. The heel of the shoe should not slip off the foot as you walk or run.
  - Always re-lace the shoes you are trying on. You should lace through each top eyelet as you crisscross the lacing pattern to ensure a more snug fit and decrease slippage. Don't tie the laces too tight as this may cause injury to the nerves or tendons on the top of the foot and ankle.
  - There should be a firm grip of the shoe to your heel. Your heel should not slip as you walk or run.

Now that you know what type of shoe to buy and tips to picking out a properly fitting shoe, you need to consider its construction—how well it was made. Understanding the basics of shoe construction can help you choose intelligently from among the thousands of available styles.

- Stitching should be secure, even, and straight. There should be no rough spots, wrinkles, bulky seams, or gummy adhesives.
- Rubber around the base of the shoe should be one continuous strip, tightly attaching the sole to the upper.

- The toe box should be square for adequate toe room.
- The shoe should have side and tongue padding for extra comfort. Cushioning on the cuff around the ankle and at the Achilles tendon helps to reduce friction and irritation.
- The inner sole should be soft and resilient, with adequate arch cushions.
- The reflector should be as big as possible, especially if you will be outside at dusk or dawn.
- The insole should be removable for cleaning and, when it loses springiness, replacement.

In addition to being overwhelmed by all the choices in athletic shoes, you may be surprised at how much they cost. Slick ads and television commercials tout technological features, the latest gimmicks, and shoes named after sports celebrities. Paying more than \$100 does not necessarily get you a better shoe. Good quality shoes may be pricey, but don't overlook the less expensive shoes because they can outperform their costlier brandmates. Be sure that whatever price you decide to pay for the shoes, it's because the shoe has the features that meet your needs—not because it is a certain brand or has a sports celebrity's name on it.

#### **REFERENCES**

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# ACTIVEWEAR

Sales of activewear are at an all-time high. According to the market research firm NPD Group, activewear sales generated \$35 billion in 2014 and made up nearly 17% of the entire American clothing market.

Activewear is clothing worn for sport or physical exercise and uses the latest in performance fabrics and technology to ensure that apparel can stand up to the intense demands of sporting disciplines like running, cycling, swimming, and gym-work. Activewear includes tops, shorts, tights, socks, jackets, sports bras and so much more. The right activewear can enhance your training and performance. Fabric and fit are probably the most important factors when choosing activewear

## FABRIC

Fabrics are designed for different purposes. Some fabrics pull sweat away from your skin and others absorb it. When it comes to workout clothes, some choices are better than others depending on your workout.

### Wicking:

Wicking fabrics are breathable synthetic fabrics that provide moisture control for an athlete's skin during a mid to high intensity workout. In essence, the fabric "wicks" the sweat away from your skin which can help it evaporate quickly and keep your body cool.

Wicking fabrics tend to be soft, lightweight and stretchy, making them an excellent choice for activewear. This broad category of fabrics is used to make garments like T-shirts, sports bras, running and cycling jerseys, socks, and polo-style shirts for any physical activity where the goal is to keep your skin as cool and dry as possible.

Moisture-wicking fabrics are used to make apparel for outdoor activities such as hiking, fishing, mountain biking, snow skiing, and mountain climbing.

There are a number of products marketed for their wicking. Many of these products are used as a blend with each other or with cotton. Additionally, these products may be branded under a variety of names such as Dri-Fit, CoolMax, Vapor and Climalite.

1. **Polyester** - Polyester is the workhorse of the workout fabrics and is the one you see on labels most often. Basically plastic cloth, it's durable, wrinkle-resistant, lightweight, breathable, and non-absorbent.
2. **Spandex** - Also known as elastane and by the brand name Lycra, spandex puts the stretch in workout wear. The synthetic fabric can expand to nearly 600 percent of its size, offers an unrestricted range of motion, and then snaps back in place. Spandex is an anagram for expands.
3. **Emerging Performance Fabrics** - The next big thing in activewear is products that provide even more benefits. Benefits include improved wicking, temperature control, UV protection and anti-odor properties. Bamboo is an example of a new, emerging performance fabric. These products may also be more expensive.

### Cotton:

Cotton can also be a good choice when choosing activewear. Cotton is a breathable, soft, comfortable and natural fiber that works well for lighter workouts. Cotton also tends to be less expensive than synthetic activewear. However, cotton is very absorbent and is slow to dry. When wet, cotton holds the moisture next to your body.

## FIT

Choose activewear that fits your body and your workout. For example, if you are running or biking, avoid wide-leg or loose pants/leggings. Likewise, for activities such as yoga or Pilates, choose stretchy, fitted fabrics. Additionally, avoid fabrics that could chafe or irritate your skin during repetitive movement.

Pay closer attention to fit more than than size because some workout clothes tend to run smaller and more form fitting than regular clothes.

**COST**

There are many factors to consider when shopping for activewear. You may be surprised at how much activewear costs. Paying the top dollar does not necessarily mean that you will get the best activewear for you. Be sure that whatever price you choose to pay for activewear that it is the right activewear for you and that it meets the needs you desire.  
<https://makersrow.com/blog/2014/08/powerful-tips-for-manufacturing-an-activewear-line/>

# SUNGLASSES

Sunglasses can be a very important fashion accessory. But their most important function is safeguarding the health of our eyes by preventing damage from the sun's ultraviolet (UV) rays. Most people, including children, should own a pair of shades, and in some cases, may need more than a single pair.

The National Eye Institute reports that an estimated 20% of cataracts cases are caused by extended UV exposure. In addition, UV exposure can cause macular degeneration which is the leading cause of blindness in the United States. In 1988, a study by Johns Hopkins University indicated that people who did not use some form of eye protection were three times more likely to suffer from eye ailments such as cancer of the eyelids than those who wore protective sunglasses. Most sunglasses will protect eyes adequately, although some styles do not include protective features. Nothing, including sunglasses, offers protection against the harm caused by looking directly into the sun. That includes before, during, and after an eclipse as witnessed in the United States in August 2017.

Choosing sunglasses for eye protection allows a wide range of choices. Selecting a pair of sunglasses based on wearer comfort and personal preference may be more difficult. Knowing what features are available will help in finding the best pair of sunglasses for the conditions in which they will be worn.

## FUNCTION

Besides the infinite variety of fashion design and style, sunglasses offer a more valuable and practical purpose. Sunglasses can offer both protection and comfort for the eyes.

Eyes are bombarded with light rays of all wavelengths from the sun as well as from artificial light. However, much of the concern over eye health involves the shorter wavelengths, called ultraviolet (UV) light. UV light is further divided into two categories of shorter wavelengths (UVB) and longer wavelengths (UVA). Research has shown that UVB rays (the shorter of the two) have been found to cause more eye damage than UVA rays.

The main protection offered by sunglasses is filtering out these UV rays. How dark the lenses are does not determine how well UV light is filtered out. Blocking UV rays is often accomplished by adding chemicals to the lenses or adding a special coating. In fact, a clear lens with no tint and 100% UV protection is better for your eyes than dark, heavily tinted sunglasses without UV protection.

Sunglasses can provide other benefits than UV protection. Working or playing in bright light can cause the eyes to tire quickly or become fatigued. Wearing sunglasses while working in bright sunlight or brightly lit work areas can provide comfort and keep eyes from tiring quickly.

Sunglasses also provide some protection from dust, debris, and particles in the air. Sunglasses may serve to keep dirt from getting into the wearer's eyes and becoming uncomfortable. This is especially true for people who wear contact lenses.

## LABELING

Labels should reference that the sunglasses "block 99 to 100 percent of UVA and UVB rays" or "absorbs up to 400 nm of UV radiation."

ANSI – The American National Standards Institute is a nonprofit organization that oversees development of voluntary standards for sunglasses and other products. More specifically, the reference to "ANSI Z80.3" is related to the blocking of UV rays, including UVA and UVB and the normal to strictest UV blocking requirements.

ISO – The International Standards Organization is an independent, non-governmental international organization that develops specifications for products, services and systems, to ensure quality, safety, and efficiency in almost all aspects of technology and manufacturing. Sunglasses may refer to or include labeling that includes ISO 8980-3 which relates to the "attenuation" of solar radiation (UV light). They may also be labeled with ISO 14889 as "...intended for driving."

Examples of ANSI and ISO labeling requirements related to intended use and performance claims may include absorbing, reflective, tinted, polarizing, or photosensitizing lenses to attenuate light and reduce glare.

Federal labeling requirements (U.S. Food & Drug Administration) are completely voluntary but do allow for labels that claim the sunglasses may "...reduce eye strain and/or eye fatigue due to glare."

Some recommended standards:

- Block 99% of UVB light. A UVB-blocking sunglass is adequate to protect eyes in moderately bright sunlight such as that found in low-altitude, urban areas
- A UV-blocking sunglass blocks 99% of both UVA and UVB. A UV-blocking sunglass is adequate protection in very bright sunlight like that found in low-altitude snow areas and beaches. Such sunglasses should block 60-90% of visible light to adequately reduce glare and increase visual comfort. The lenses should allow you to recognize traffic signals accurately.
- To protect eyes during prolonged daily use in extremely bright sunlight, like high-elevation snow areas and equatorial sand beaches, a UV-blocking sunglass should block 92-97% of visible light and have side shields. Goggles are also acceptable. Side shields are needed in extremely bright sunlight to prevent UV rays and light from being reflected into the eyes. These sunglasses limit a driver's ability to accurately recognize traffic signals. Side shields should not be worn when driving because they eliminate peripheral vision.
- The only medical claims allowed on sunglasses are that they prevent cataracts and photo keratitis.

## FRAMES

Frame materials are generally made of plastic, nylon, metal, or metal alloy. Frames should be considered for form and function. They should also be comfortable and sturdy. You should always check your frames to ensure they have not been bent or warped out of shape during storage or transport. The frame's primary function is to hold the lenses. They should not interfere with or block the wearers vision, including peripheral. Labeling of the frame material may be a bit absent for the lower-end frames.

- Plastic frames are generally the most affordable option
- Acetate frames are a form of plastic are a bit stronger, more flexible, and lighter than standard plastic frames. They come in a huge variety of colors and textures. The color tends to stay because it is embedded in the material not painted on like other plastics.
- Polycarbonate frames are very versatile, tough plastic with impact resistance and is used in many sports. Despite their toughness, they tend to be rigid frames and are not very flexible. These are good frames for children because they can really take a lot of abuse.
- Nylon frames are very resistant to temperature fluctuations, remain very flexible, but are stiff enough for safety. These frames tend to be less expensive, lightweight, and stronger than metal frames.
- Metal frames are commonly used due to its malleability, corrosion resistance, and ease of adjustability making it very easy to tailor to many face shapes. They tend to be more expensive, less durable, and not ideal for sports. Titanium frames are more durable but tend to be more expensive.

Frame size can vary greatly between manufacturers and styles. There are several measurements that are standard on eyewear, but not all sunglasses indicate the size of the frames. The frame size may be represented by three numbers (e.g. 52 – 18 140 MM or 52 - 18 140) located on the inside of the temple or bridge of the frames. The first number is lens width (52), then bridge width (18), and the temple length (140) in millimeters. Many sunglasses are marketed on a Small, Medium, or Large scale. Knowing the dimensions of your face temple-to-temple may be useful in this regard. The frames should be wide enough to not press on the temples. However, this makes it much more difficult to select a pair of sunglasses without trying them on, making internet purchases a challenge. Another size factor is the temple length. The temples should be long enough to rest comfortably over the ears. Proper fit for comfort and function are important.

Frame function refers to the style and purpose of the sunglasses. This is the broadest of variables in selecting your sunglasses. The wearer should consider the primary use of the eyewear to determine the best frame style. The frame style may also impact the type and size of lens it will accommodate. Some frame styles are not suited for glass lenses. One distinct style is the wraparound sunglasses. They are shaped to keep light from shining around the frames and into your eyes. Studies have shown that enough UV rays enter around ordinary eyeglass frames to reduce the benefits of

protective lenses.

Large-framed wraparound sunglasses can protect your eyes from all angles. Keep in mind that frames should not obstruct your vision, or side vision. However, the main criteria for frame style is wearer preference.

Frame color is entirely at the discretion of the wearer. As long as a style is comfortable, functional, and does not block vision, then color has no real bearing aside from wearer preference.

## LENSES

The materials used to make sunglass lenses varies between glass, plastic and SR-91. In fact, there are many types of glass and plastic used as lenses in sunglasses. The most common materials are identified here. Finding a pair of sunglasses that are made of unique materials may make your decision a little more difficult. Consider doing your own research on variations of these more common materials.

Glass lenses have the best optical clarity and provide a greater resistance to scratching than other materials. However, they are much heavier relative to the plastic or SR-91 lenses. Another advantage of glass lenses is they are better at retaining their shape in extreme temperatures. Specifically, leaving glass-lens sunglasses on the dash of your car in direct sunlight on a sweltering day will likely not warp or change their shape unlike plastic lenses. From a technical perspective, glass lenses tend to be thinner than plastic lenses due to their refractive index range. This is important when you are purchasing prescription sunglasses. Vision that requires greater correction requires more curvature of the lenses which results in thicker lenses. Relative to plastic lenses, glass lenses will likely be thinner due to their better refractive index range. Nonetheless, the glass lens will most likely be heavier than its plastic counterpart. One very important disadvantage of glass lenses is that they can shatter or break on impact. This is important to keep in mind depending on the application and use. As a general rule of thumb, you can expect to pay more for glass lenses than plastic lenses.

SR-91 lenses are made from a proprietary resin-based material developed by Kaenon Polarized and are exclusive to their brand of eyewear. They are considered a luxury performance brand that has the highest rating of optical clarity and acuity. In addition, SR-91 lenses pass the high-mass impact ANSI

1.1.1 testing. The SR-91 material is very light, much like plastic lenses, and are good for sporting and long wear applications. One can expect to pay more for these types of lenses than any other type of lens material including glass or plastic.

Plastic lenses can be made from several types of plastic such as acrylic, polycarbonate, plastic polymer (CR-39), or polyurethane. In general, plastic lenses are lighter and provide greater shatter-resistance than glass lenses. However, they are more susceptible to scratches. Polycarbonate plastic lenses are the lightest of the plastics and are virtually shatterproof. This makes them exceptional choices for impact protection. The most common plastic used for eyewear lenses is CR-39. This material is light, has higher scratch resistance than other plastics, and low transparency for ultraviolet and infrared radiation.

*Note: Infrared wavelengths are invisible and produce heat. Sunlight has low levels of infrared rays, and the eye tolerates infrared well. Some sunglass manufacturers make health claims for their products based on infrared protection, but research has not shown a close connection between eye disease and infrared rays.*

Photochromic lenses can be made of glass or plastic. Also referred to as photosensitive lenses, they darken and lighten in response to the amount of available light or type of light. For sunglasses, this may be a valuable tool for situations where the amount of light varies. This would allow a lens to get darker in brighter light. The more direct sunlight they are exposed to affects how dark the lens will become. It is important for drivers to know that these lenses will not be as dark inside the vehicle because they are not exposed to as much UV light. This may cause eye fatigue on very bright days when glasses do not darken fully. Another important characteristic is that they darken more quickly than they lighten. This may create problems when moving from direct to indirect sunlight areas. While sunglasses by nature do have a specific lightness/darkness, this lens adds variability to a pair of sunglasses. This can be a very useful option for some wearers, but not very commonly found on the market making it difficult to find.

## **COATINGS AND TINTS**

Coatings and tints are added features that are added to lens in the manufacturing process or as part of custom lens retailers. Either way, there is a wide range of options that provide some value and style to the wearer in the appropriate situation.

Polarized lenses are specifically designed to reduce glare which is generally caused by reflected sunlight or artificial light. Some of the most common sources of glare from bright sunlight could include light bouncing off water, pavement, glass, or other reflective surfaces. Polarized lenses also improve contrast because of the reduced glare. People involved in water sports and fishing have been taking advantage of the benefits from polarized lenses for many years. However, more and more outdoor enthusiasts have found benefit from the glare-reducing feature. Polarization is a coating or film that is added to a lens. This coating can be as part of the manufacturing process for sunglasses or can be added when ordering custom sunglasses as an added feature. Adding this coating at the time of purchase is only likely to occur among custom sunglass or optical retailers with the ability to customize lenses at the buyer's request. Your standard retailers will likely market sunglasses with a variety of styles and options with and without polarization since they do not have the ability to customize your pair of sunglasses.

Tinting is also a coating that is added to lenses. Tinting can have both aesthetic benefits or functional benefits to the wearer. If you are looking for style, there are several ways to tint lenses to make the special impression and just look great. As with other features of sunglasses, they can be purchased with as is or can be customized with specialty retailers that offer customization.

- Plain lenses are uniformly tinted throughout the lens and come in a wide range of tints or colors. The darkness of the lens has nothing to do with how well it blocks UV light, but it will make a difference in how much visible light gets seen. This may be important for eye comfort during prolonged time in bright sunlight.
- Single gradient lenses are tinted darker at the top and lighter at the bottom. They may be useful for tasks like driving, where the road is bright but the dashboard is dark. They are not very useful for places like the beach where light is reflected up from the sand. They may also be useful when walking to avoid tripping, especially when going from a bright area (outside) to a darker area (inside). The difference in tint also causes the lighting to change as the wearer moves their head which may be annoying for some. Gradients can add a unique look or style to the wearer.
- Double gradient lenses are tinted darker at the top and bottom, but lighter in the center. These are very specifically designed for sports such as sailing, skiing, and tennis, where light comes in from above and below, but the center of vision has less light coming in. These glasses are not appropriate for driving, since they darken visibility of the dashboard controls. Like the single gradients, the changing of light with head movement may be annoying to the wearer.

Anti-Reflective (AR) coating is a thin coating that eliminates or greatly reduces reflections and glare that are created by the light reflected by lenses themselves. This can occur on the front or back of the lens. However, in the case of sunglasses, the more common use of AR coating is on the back (inside) of the lens. This coating eliminates glare on the inside of the lens that may occur from light coming in from the sides, top, or bottom of the frames. AR coating works better with plastic lenses but also makes them more susceptible to scratching. Combining AR coating with scratch coating may reduce this issue but adds cost to the lenses.

Anti-Scratch coating is a film or coating that can be applied to sunglass lenses that reduces the appearance of scratches on the lens. Anti-Scratch coating does not make lenses scratchproof, it only reduces the likelihood. Scratches can impair vision depending on the location and severity of the scratch. This coating can prolong the life of your sunglasses. They are generally not an expensive option to add to your custom glasses.

Mirror or Flash lenses have a mirrored or flash coating that is reflective on the outside (front) of the lens with metallic silver, iridescent, or colored appearance. The coating makes them appear like mirrors and typically give the wearer's vision a brown or grey tint. The mirror coating decreases the amount of light passing through the tinted lens making them useful at high altitudes or in sand, water, or snow. One significant disadvantage is that they can scratch easily.

### **LENS COLOR**

Lens color can be a dye in the lens or a coating on the lens. Color on coated lenses is more likely than dyed lenses to scratch or wear off. Coated lenses can be protected by the manufacturer through use of scratch-resistant layers. Overall, dyed lenses retain color longer.

Darkness of a lens determines how much visible light will be let in. No special instruments are needed for this—the wearer can tell just by looking through the lenses. If glasses are to be worn in very bright conditions such as for water sports, a darker lens is more practical. For everyday wear, a medium to light lens is usually sufficient and may be more versatile. The main point is to match the amount of tint to the purpose for which the glasses will be used.

At one time, amber lenses were claimed to be superior because they reduced “blue light,” or shorter light rays. Because amber colored glasses reduce the transmission of blue light, they are sometimes preferred by pilots or others who need enhanced clarity of distant objects which may be obscured by a blue haze. However, no studies have proven that amber glasses provide any more protection as it relates to eye health than other colors. The amber sunglasses are popular among skiers, hunters, boaters and pilots

Lens color makes little to no difference in effectiveness of eye health. The color preference of the wearer is the main basis for color choice. Gray colored lenses offer the least color distortion to the wearer. Because of this, they are preferred by some people.

Care should always be taken when selecting colored lenses when it comes to driving. Some colored lenses affect the way traffic signals appear to the wearer. Certain colors may affect not only the recognition of specific traffic signal colors but the transition of those signals.

### **QUALITY**

Most sunglass lenses are made of plastic which are more durable than glass lenses. Plastic lenses are lighter than glass lenses, reducing the overall weight of the glasses. Plastic lenses scratch more easily than glass lenses, but can be coated with an anti-scratch layer. One way to evaluate lens quality is to look for scratches on the lenses at the store. Many times, unpackaged sunglasses on displays are handled by many people which can cause scratches. However, this might be a good indicator of quality if a certain style or brand have scratches on the lenses. If they are packaged and have scratches on the lenses, that could also be an indicator of inferior quality. Glasses that cannot survive transport without scratching will scratch easily in everyday wear.

Lens distortion occurs in both glass and plastic lenses. It means that looking at objects through the lenses causes the objects to look oddly shaped. In glass lenses, this may occur if the glass has been formed rather than ground. In plastic lenses, distortion may occur because of handling after manufacture. Either way, distortion is easy to detect. Find an object with straight lines (like floor tile) and look through the lenses at arm’s length, and moving the lenses slightly up/down and left/right. If the lines warp or curve when you move the glasses, the lens is distorted. Cost is not a guarantee of distortion-free lenses or quality. Inexpensive lenses will often be free of distortion. All sunglass lenses must pass the Food & Drug Administration’s safety test for breakage.

### **COST**

Where sunglasses are concerned, there is no direct correlation between price and performance. Effective, reliable, high quality sunglasses can be found among even the most inexpensive options.

The lowest priced sunglasses may be more prone to lens distortion or scratching, but both of these conditions can be determined by visual inspection and reading labels for protective coatings, construction materials, and ratings. High fashion and brand names may raise the price, and many times provide better labeling and information than lower priced options.

**ACCESSORIES**

As with most consumer products, a variety of accessories is available to go with sunglasses.

Retainers, cords, cases, pouches, visor clips, spare lenses, cleaning kits and more are all available for sale individually or come with eyewear purchases. There are infinite styles, sizes, colors, shapes, and materials of these accessories. Some of them add to the functionality of your sunglasses, while others prolong their life. Consider how the accessories add or detract from the value of your purchase.

## **HANDSFREE BLUETOOTH CAR KITS**

Effective September 1, 2017 there is a new Texas law that bans texting while driving within the state of Texas will be punishable by a fine of \$25-99 for first time offenders, and \$100-200 for repeat offenders. According to the Texas Department of Transportation, 455 people were killed and more than 3,000 seriously injured in the state of Texas in 2016 in vehicle crashes related to distracted driving. However, handsfree use of cell phones while driving is not considered risk free driving. According to National Safety Council, to stay safe that you need your eyes on the road, your hands on the wheel, and your mind on driving.

New technologies are offering a handsfree solution to prevent texting and talking while driving. There are a variety of products that enable drivers to speak aloud a text or email message, or listen to one being read, without having to type on their phones. There are a variety of aftermarket hands free Bluetooth compatible devices available to offer a safer option for cell phone use while driving.

Choosing Bluetooth Handsfree Car Kits for safer cell phone use while driving offers a wide range of choices. Selecting the correct Bluetooth Handsfree device for a car may be difficult depending on your preferences. Learning what features are available will assist you in picking the best device for the situation that it will be utilized. Many new cars come equipped with handsfree technology, however there are several aftermarket Bluetooth handsfree car kits available if your car does not come equipped with one.

### **FUNCTION**

Depending on the design of the vehicle there is a wide range of styles and characteristics to handsfree mobile devices depending on the desired use of each device. Bluetooth Handsfree Car Kits can be as complicated or simple as the consumer chooses for their desire. Handsfree kits can be used with cell phones for comfort and improved safety. Bluetooth handsfree are used for handsfree communication utilizing Bluetooth wireless technology. For the devices to work they still require a mobile phone. Bluetooth allows for easy phone calls. With your voice command on your cell phone you can also call people in your contact list by saying their name without having to scroll through your contact list. Also, utilizing your voice command on certain phones you can text people in your contact list without typing the text with your hands.

To set your cell phone up with a Bluetooth device is called "pairing". To utilize a Bluetooth electronic handsfree device it must be Bluetooth compatible and the Bluetooth feature must be turned on. Prior to purchasing a Bluetooth handsfree mobile device for your car make sure that your phone does have Bluetooth. Most Bluetooth handsfree devices also allow you to stream music or audiobooks through your car speakers or the device itself. Music downloaded on your phone as well as Spotify, Pandora and more can be played directly from your handsfree device via your cell phone.

Navigation Systems and Siri can also be utilized through Bluetooth handsfree devices to assist with finding where you are going without having to use your hands to type in the destination.

Voice texting is dependent upon the app you choose to use on your cellular device. Most smart phones are either equipped with voice texting via car mode or other apps that can be downloaded. The Bluetooth car kit simply makes it easier to voice text while driving because of the speaker and quality of sound.

### **EASE OF USE AND COMPATIBILITY**

The primary purpose of a Handsfree Bluetooth mobile device is to limit the distraction of a driver while they use their mobile device.

A minimum number of parts and accessories make utilizing your handsfree device much more pleasant and desirable. Usable controls should be well placed and easy to access without distracting you from driving. You want to be able to answer a call, hang up a call, or change the volume of a call with minimal effort. Voice activated commands are desired for handsfree mobile devices. Ease of use- needs to be easy to understand and set up.

Automatic pairing to a cell phone should be standard. You want to be able to pair your cell phone the first time and then it should automatically recognize your phone when you get back in your vehicle.

### **FEATURES**

There are a variety of features that each individual Bluetooth handsfree mobile device offers. Some of them may be of use to you and others may not be of use to you at all. To have ideal use of your Bluetooth handsfree device there are some feature that you may want to consider:

1. Multiple Connections- allows a user to have more than one device connected at the same time.
2. Caller ID- Shows who is calling. Some kits that have a LCD screen will have a caller ID that shows up in the dark to determine who is calling.
3. FM Transmitter- Allows music to be streamed from the phone, calls are heard through the car's speakers.
4. Energy Saver- Kit powers off if it has not been used for a certain period to save battery power.
5. Noise reduction- during a call, the device reduces outside noise and provides more sound clarity.
6. Call Toggle- enables user to toggle between more than one call at a time.

Battery life for each handsfree Bluetooth car kit vary among each individual device. Most car kits come with a charger to charge up the device for use. It is important to make sure that the device you choose either can be charged while in use or will provide the desired of hours that you anticipate to use of battery life.

### **CONNECTION**

There are a variety of methods to connect your handsfree Bluetooth car kit to your automobile.

1. Connecting with USB- Some new model cars are equipped with a USB built into the stereo. Most electronic devices will allow you to access the audio through the car radio interface.
2. Connecting through Auxiliary In- Most new car stereos allow you to connect any device that can play audio into your stereo via an auxiliary port. This will not allow control of the device through the car radio but is a simple and easy method to hook up your handsfree car kit if available.
3. Connecting through a Cassette Adapter- Some older car stereos that still have a cassette player can utilize this method of connecting to a handsfree device.
4. Connecting through FM transmitters- A good method to integrate your cell phone to a car without a direct connection method.
5. Aftermarket stereos- It is always an option to completely get a new head unit for your car stereo that may offer more modern technology. This method can be more expensive.

### **FM TRANSMITTERS**

FM transmitters allow your cell phone to work as a radio station in your automobile. They connect to your car and play the music across the FM radio frequency. They provide a wireless solution and will work in any car that has an FM radio. Bluetooth Handsfree Car Kits with FM transmitters have pros and cons. The pros for car kits with FM transmitters are the following: compatible with any car with an FM radio; FM transmitters are universally compatible with any device with a (3.5mm) headphone socket; Control is through your media player, making it easy for passengers to also select music from your electronic device; most FM transmitters can transfer audio from other applications such as Google Maps or Spotify. Cons for Bluetooth Handsfree Car Kits with FM transmitters include: FM transmitters can suffer from interference affecting sound quality; will not integrate with car controls; most transmitters will not transfer information to car display; FM transmitters typically cost more depending on all the features available.

### **DESIGN**

Portable Bluetooth handsfree units can in several different designs. Many of the devices can attach to your visor. It is important to make sure that those devices are slim so that they will not obstruct the driver's vision.

### **COST**

There is a wide range of cost for Bluetooth Handsfree Car Kits. Reviews of these devices show that cost is not necessarily a direct correlation with the performance of the device. It just depends what features are important to the consumer and how much money they want to spend. The lower priced devices may not offer all the desired features but many lower priced products still prove to be useful and dependable to consumers.

# COMPUTERS

Computers are an integral part of our lives every day, from checking e-mail, to posting information on social networks to paying bills, or completing school assignments. Regardless of your various reasons for purchasing a computer it is important to know what you need before making purchase in order to have a computer that you can accomplish your task with. With all the options of both standard packaged computer's or a custom built computer, learning which one is best for you can save you money, and headaches, in the long run.

## Key Terms

In order to understand the computer purchasing process, consumers need to be familiar with some key terms. These terms are words that can be seen at stores where computers are sold, websites of computer manufacturers' and other places where computers are seen.

- Cable Modem – used for connecting to the Internet and is much faster than a typical dial up modem.
- Central Processing Unit (CPU) – The area of the computer that processes everything from basic instructions to complex functions.
- CDRW – A CD drive that can read write and rewrite to a CD.
- Computer – A programmable machine. The term most often is used to refer to a desktop or laptop computer.
- Desktop/Tower Computers – Commonly referred to a computer system that is not moved frequently and stays on a “desktop” for use.
- Digital Subscriber Line (DSL) – Is a medium for transferring data over regular phone line and can be used to connect to the Internet.
- Expansion Card – A printed circuit board that can be installed in a computer to add functionality to it. For example a user may add a new graphics card for 3D graphic power.
- External Hard Drive – A drive located outside of the computer for the typical purpose of the backing up of an internal hard drive or for the storage of additional/large files.
- Hard Drive - This is where you will store all your files whether it be music, movies or word documents.
- Input Device – Any device that provides “input” to a computer. Such devices include keyboard, mouse, web cameras, etc.
- Internal Hard Drive – A drive that resides inside the computer, which most times includes the operating system and pre-installed applications.
- Keyboard – A board of keys used for inputting data into the computers.
- Laptop – Also known as notebooks, are portable computers that you can take with you and use in different environments. They include a screen, keyboard, a trackpad/trackball which serves as a mouse.
- Liquid Crystal Display (LCD) – Super-thin displays that are used in laptop computers screens and flat panel monitors.
- Memory - Memory can refer to any medium of data storage, it usually refers to RAM, or random access memory. When your computer boots up, it loads the operating system into its memory, or RAM.
- Monitor – Used synonymously with ‘computer screen’ or ‘display.’ The monitor displays the computer’s user interface and open programs, and the user to interact with the computer.
- Motherboard – Main circuit board of your computer.
- Mouse – One of the primary input devices on a computer. The mouse allows for quick movement around the monitor and implementation of action based on the ability to use the buttons located on the mouse.
- Network Card - Your computer should have an Ethernet port on it. This port will allow you to physically connect to the internet or your internal network by plugging it into your router / modem.
- Operating System - This is the software that makes your computer go. You can buy a computer with the Mac OS X operating system or Windows 7 or any flavor of Ubuntu Linux as well.
- Optical Drive - The optical drive in your computer should be able to read and write CDs and DVDs.
- Processor - This is the brain of your computer. It can also be referred to as the CPU. Processors come in many different varieties. Processor speed is measured in gigahertz or GHZ. The larger the number of GHZ the faster the computer.
- **Plug and Play (PnP)** – Devices that work with a computer as soon as they are connected.
- **Random Access Memory (RAM)** - The RAM or memory is what your computer uses to store information while

you are using the computer. This can also be referred to as Random Access Memory.

- **Read Only Memory (ROM)** – Not to be confused with RAM, ROM is memory containing hardwired instructions that the computer uses when it boots up, before the system software loads.
- **Serial Port** – Type of connection on PCs that is used for peripherals such as mice, gaming controllers, modems, and older printers. Sometime called a COM port.
- **Sound Card** – A component inside the computer that provides audio input and output capabilities.
- **Storage Device** – Any type of hardware that stores data.
- **Speakers** – Common type of output device that produces audio output that can be heard by the listener.
- **Universal Serial Bus (USB)** – Most common type of computer port used in today's computers.
- **Video Card** - This is the part of your computer that allows you to show what you are doing. Without a video card you would not be able to see what you are doing on your monitor.
- **Video Graphics Array (VGA)** – Standard monitor or display interface used in most PCs.
- **Wireless Network Card** – A card you will be able to access the Internet without a wire connecting you to a router/modem.

Reference: Tech Terms Dictionary, <http://www.techterms.com/>

### **Computer Purchase Options**

#### *Desktop or Laptop*

Before purchasing a computer, you need to decided what type, or style, of computer is best for you. Basically, computers are categorized as desktops and laptops. The information below provides a quick overview of the different options, and which would be a best option for you.

The laptop is a great option if you:

- Live in a small space that simply cannot house you and a desktop PC at the same time
- Have an aversion to wires
- Want to take your PC anywhere including in and around your house or on adventures beyond four walls without having to bring a hand truck
- Love your PC so much that you cannot bear to part with it. Ever.
- You're a super secret agent, where smaller and mobile is indeed better

The desktop PC is a great option if you:

- Want to pay a little less and get a little more
- Don't plan to take it anywhere, or if you do (you gamers especially), you don't mind the hassle of packing it up every time
- Like the idea of upgrading the heck out of it
- Are a super demanding computer user and multimedia junkie

Reference: Intel, <http://www.intel.com/learn/practical-advice/before-you-buy/evaluate/desktop-or-laptop>

### **Factors To Consider If Purchasing A Laptop** (PC World, [www.pcworld.com](http://www.pcworld.com))

Notebook buyers have to think about such additional variables as size, weight, screen dimensions, battery life, and keyboard quality--plus options such as built-in wireless.

#### *Key Features:*

- **Processor:** Intel's dual-core processors have helped laptops gain ground in the power department. In PC World tests, laptops using these dual-core processors performed considerably faster than laptops using single-core processors, particularly when multitasking. In newer notebooks you may see references to Core Duo, Core 2 Duo, and Core 2 Extreme, which represent steps up in computing power for laptops.
- **System memory:** Unless you're buying on the cheap, a new laptop generally includes 2GB of system memory. Many notebooks today are available with 3GB of RAM or more. Before electing to upgrade to more RAM than that, be sure to check which version of Windows your new notebook uses. A 32-bit OS can't efficiently use more than 3GB of RAM. A 64-bit version can go higher. Outfitting your laptop with more RAM at the time you buy it is convenient and helps you extend its useful life.
- **Graphics memory:** Portables can have either of two different types of video chip sets: dedicated video (which

means a separate preinstalled graphics card) or integrated graphics. If you intend to use your laptop for even casual gaming, make sure that it has memory dedicated to graphics use, rather than relying on graphics that pull from main memory.

- **Screen:** Some laptop screens continue to get bigger--and most have gone wide, too, enabling you to view spreadsheets or movies with ease. But other screens have gotten significantly smaller to accommodate all sorts of road-ready computing. Price is no longer much of a deterrent for any of these choices. Even budget shoppers can afford the luxury of high-resolution color:
- **Battery:** Laptop battery life continues to improve. Keep in mind that manufacturers may improve their times by taking steps such as turning off wireless receivers, which tend to consume a lot of power. Also, check to see if the manufacturer's stated battery-life numbers are for its regular or extended-life battery--the latter kind of battery can last up to twice as long as a regular one. And remember that, in general, lighter laptops tend to have longer battery lives than big desktop-replacement notebooks do.
- **Keyboard and pointing device:** Though you can get accustomed to almost any laptop keyboard, it's best to try before you buy. Thin-and-light notebooks usually have smaller-than-average keys spaced more closely than the keys on a desktop-replacement model, and their layouts may differ from a standard keyboard's. If you have largish hands, be aware that an ultraportable's keyboard may be difficult to use. Buy a USB mouse designed for laptops. It's a small investment, and your hands will thank you for it.
- **Optical and other drives:** Most manufacturers offer laptops with rewritable DVD drives. But now that Blu-ray Disk has triumphed over HD DVD in the high-definition format wars, more notebooks are being configured with Blu-ray drives. If you need a floppy drive for some reason, you can buy a USB add-on drive.
- **Hard drive:** Even inexpensive netbooks now come with 60GB hard-disk drives (HDDs). Most all-purpose machines offer hard drives in the range of 200GB to 320GB, and ultraportables now pack solid-state drives (SSDs). Though SSDs are faster and lighter than HDDs, their capacities are considerably lower (maxing out at around 128GB) at a significantly higher cost. So, you need to balance speed and weight against price and storage capacity. Whichever choice you make, you'll find that hard-drive space fills up quickly, so you might want to consider buying a portable external drive as well.
- **Weight and bay design:** Laptops range from 15-pound desktop replacement monsters to ultraportable lightweights that rely on external drives to come in at under 3 pounds. One-bay notebooks balance features and weight. Some laptops continue to offer the optical drive as a modular device, so you can swap it out for a second hard drive or a second battery. When making a purchase, however, keep in mind that you should consider the weight not only of the laptop but also of the AC adapter, the extra batteries, any external modules, and their cables. Ultraportable notebooks have lightweight adapters, but they can weigh almost as much as a full-size notebook if you have to carry an external optical drive, too.
- **Communications:** Most laptops have at least two USB 2.0 ports; many offer four, and some up to six. A majority of notebooks include a four-pin FireWire (IEEE 1394) port for connecting an external drive or a digital-video camcorder. Others now include eSATA ports for high-speed data transfers. Built-in ethernet now comes standard on all portables, with many models carrying gigabit ethernet. Many laptops also have built-in Bluetooth.

### The Specs Explained

Before shopping for a laptop, consider how you'll be using it. If your primary goal is to get some word processing or spreadsheet work done while staying on top of e-mail, a netbook (priced at less than \$500) will meet your needs. But a netbook does entail some sacrifices: a smaller processor, about 1GB of RAM, not much in the way of hard drive space, no optical drive, and (at biggest) a 10.2-inch screen. On the surface not much separates the netbooks from sexy lightweight notebooks, but the specs under the hood (and a big screen inside it) can inflate an ultraportable's price to as much as \$2000 more than a typical netbook.

Remember that most vendors let you custom-build and -price your own laptop by picking from a mind-boggling array of features, which gives you a lot of control over the final product. You may be able to afford a faster notebook by accepting a smaller, less-expensive hard drive or DVD-ROM/CD-RW drive, instead of a BD-ROM.

Unlike those on desktop PCs, only some of the components (such as memory and the hard drive) are upgradable; others (such as the graphics board) are permanent once they're installed at the factory. That's slowly changing, as some manufacturers begin to incorporate upgradable graphics. But take your time and pick only what you need. Following is a

rough breakout of some configuration options.

- Installed memory. The more installed memory your laptop has, the more applications you can run at once, and the better your machine will perform. Ease of access aside, upgrading memory in a notebook is a bit trickier than with a desktop, so buy as much memory preinstalled as you can afford. Laptops with 2GB of RAM are optimal. If you're running Windows Vista on a laptop, consider upgrading to 3GB of RAM (or more if your notebook uses a 64-bit version of the OS).
- Processor. The CPU determines how quickly a notebook runs applications and performs on-screen tasks. Core Duo and Core 2 Duo processors are good choices for speedy processing. Atom processors appear only in budget-friendly netbooks, so plan according to your needs
- Screen size. The specified size of a laptop's LCD screen represents a diagonal measurement. The larger the screen, the higher the maximum resolution and the more information you can view at once. The aspect ratio seen on some newer 16-inch laptop screens offers the ideal resolution for viewing high-definition movies on the go.
- Screen coating. A laptop's LCD panel is only as good as it looks when you look into it. Can you see text and images clearly when you're viewing them in broad daylight? Many notebooks that look sharp on store shelves (thanks to their extra-glossy coatings) may be tough to work with outdoors or in a coffee shop. So keep in mind not only how you plan to use your notebook, but where you want to use it.
- Hard drive. The larger the hard drive, the more data you can keep on your laptop. Most cheap netbooks offer 80GB drives at this point, so why not give yourself a little room to grow? If you plan to work with databases, spreadsheets, or digital photo or video files, opt for a large drive. Be sure to find out the hard drive's speed, too.
- Expansion bays. The more expansion bays your laptop has, the more options you'll have for switching in new optical drives or other storage drives. But switching drives takes time, and modular components aren't as common as they used to be. As laptops gravitate toward flush form factors and unibody designs, may find that your only practical option is to lug around external drives that plug in through USB ports.
- Optical drives. Most manufacturers offer laptops with rewritable DVD drives, which give you the most flexibility. Alternatively, you could purchase a notebook with a DVD-ROM/CD-RW drive, to save money.

#### **Factors to consider if purchasing a Desktop** (PC World, [www.pcworld.com](http://www.pcworld.com))

Today's modern desktop PCs offer a wealth of options: You can go for a PC with a fixed retail configuration, or you can customize your system by stepping through a sometimes dizzying array of choices from a configure-to-order vendor. The resulting array of components is no longer wrapped up in a beige box, but in a colorful shell of highly variable shape and size, differentiated by indecipherable naming conventions.

Presented with so many possibilities, you need to narrow the field by considering what you want to use your new desktop for. Are you an avid photographer looking for a speedy but cost-effective platform for editing high-resolution photos? If so, you'll benefit from buying a machine with extra RAM and a discrete graphics card. If you've acquired an extensive media collection, and want an inexpensive and compact way to pipe it to your HDTV, a compact PC tailored toward media sharing and playback may be your best bet.

Desktops fall into three major categories, each with its own range of price and performance:

- compact PCs,
- all-in-one PCs, and
- classic tower PCs
  - budget
  - mainstream
  - performance

Each style of machine has different strengths and weaknesses, and choosing the one that's best for you depends largely on how you plan to use it.

#### • **Compact PCs**

As the smallest members of the desktop computer family, compact PCs often omit features to deliver computing power in a space-saving package. The combination of energy-efficient components, quiet operation, and small size makes compact PCs ideal for people who want a nonintrusive machine. A typical compact PC costs between \$300

and \$600, though the price goes up as you add upgrade options.

Compact PCs tend to be equipped with notebook or netbook components, such as Intel Atom processors. This limits their usefulness in tasks that demand lots of processing power, but it makes for quiet, energy-efficient operation. Some compact PCs are configured for as low a bottom-line price as possible; others are packed to the gills to deliver optimal performance in a compact system.

When assessing smaller PCs, keep an eye on the number of ports. The smaller the footprint, the fewer features you can reasonably expect, and that includes fewer connectivity options. Though you'll get a VGA port and (on average) six USB 2.0 ports, many compact PCs also offer HDMI—an asset for home-theater setups.

- **All-in-One Desktops**

All-in-One PCs are self-contained: components are mounted behind a display, with screen sizes ranging between 18- and 27-inches. With no cords to manage or peripherals to juggle, setting up your new all-in-one PC can be as simple as pulling the machine out of the box and plugging it in. Some all-in-ones also offer a rather distinct perk: touchscreens.

Many all-in-one PCs come with a wireless keyboard and mouse, Bluetooth support, and Wi-Fi connectivity. This reduces cord clutter to a minimum—an important consideration in spaces where an attractive décor or efficient use of space is at a premium.

- **Budget PCs**

Typically these PCs are minitower systems, with fewer drive bays than a full tower has. Beware models that come equipped with AMD Sempron or Intel Celeron processors, as those CPUs' performance drawbacks will cancel the advantage of their low cost. Inexpensive tower desktops usually incorporate low-powered, integrated graphics rather than discrete graphics cards. As a result, your entertainment options may be limited. High-definition media playback suffers on models equipped with older Intel-based integrated graphics; and if you're interested in gaming, you'll be hard pressed to tackle anything more demanding than Flash-based offerings.

Budget PCs generally offer at least 320GB of storage space and at least 2GB of RAM, but permit few upgrade options beyond adding RAM or a larger hard drive. They rarely leave much room for expandability inside their cases, either. Still, if you need a machine for nothing more than word processing, e-mail, and occasional DVDs or online videos, these machines should suit you just fine.

- **Mainstream PCs**

up in the desktop chain, you'll find machines aimed at mainstream users. These PCs start in the vicinity of \$800, and carry at least 500GB hard drives and about 4GB of RAM. Powered by dual-core and lower-end quad-core processors, they deliver better performance than budget desktops, without breaking the bank.

Photo-editing applications stand to benefit from working with multi-core processors, and entertainment enthusiasts will appreciate the improved gaming performance and stutter-free HD media playback that a discrete graphics card helps deliver. Many of the machines in this category include a Blu-ray drive, either standard or as an optional extra. And if your video editing needs are modest, you probably can find a machine in the mainstream price bracket that has enough power to handle your creative projects.

- **Performance PCs**

Occupying the high end of the spectrum are performance desktops. Such PCs generally start at a little over \$1500. Most performance PCs are full tower systems, equipped with a slew of drive bays and expansion slots. Designed to tackle challenging tasks, they come equipped with the latest and greatest Intel and AMD dual- and quad-core processors, 6GB or 8GB of RAM, and at least one discrete graphics card. Some performance desktops include multiple graphics cards to deliver improved graphics performance.

Performance desktops are suitable for users who need a lot of processing power to get their work done-- professionals who do extensive high-resolution photography or video editing, and gamers who are willing to pay for top-of-the-line visual effects.

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# DIGITAL CAMERAS

There are hundreds of cameras available ranging from those that will easily fit a shirt pocket to very large complex cameras. Often times, these cameras are advertised with abbreviations that can be confusing for the novice consumer.

## Film Camera vs. Digital Camera

Here is a quick, basic comparison so you can understand the difference between the two types of technology (film vs. digital). With a film camera, an image is formed by collecting light from a particular scene or subject and focusing on film, which reacts chemically when struck by light and is said to “capture” the image. What makes a camera “digital” is that, instead of film, it has an image sensor that reacts to light by sending out electrical signals. The camera takes the information from the image sensor and processes and stores it as a collection of pixels in a digital file, usually on a memory card inside the camera.

## Terminology

- **Pixel** – (short for picture element) tiny dots that make up an image. Each pixel can only be one color at a time; however, since they are so small, pixels often blend together to form various shades and blends of color.
- **Megapixels** – when you collect a million pixels, you have a megapixel. The number of megapixels tells you how many pixels the image file has. A camera that captures 8 million pixels, for example, is called an 8 megapixel camera.
- **SLR Camera** - A single-lens reflex (SLR) camera is a camera that typically uses a semi-automatic moving mirror system that permits the photographer to see exactly what will be captured by the film or digital imaging system (after a very small delay), as opposed to pre-SLR cameras where the view through the viewfinder could be significantly different from what was captured on film.
- **Viewfinder** - what the photographer looks through to compose, and in many cases to focus, the picture
- **Shutter Speed** – controls light and motion. Slower shutter speeds make the image lighter. Faster shutter speeds make the image darker. Faster shutter speeds also means the more a moving subject will be blurred in the picture.
- **Aperture** – (also called f-number or f-stops) a hole or an opening through which light travels; controls both light and depth of field. The larger the aperture opening, the more light affects the image and the lighter the image. The smaller the aperture, the greater the area of sharpness.
- **Compression** - the process of making larger image files smaller and more manageable. The less compression produces better image quality (higher resolution) which results in larger prints. However, less compression also means that you cannot store as many images. More compression produces lower quality images. These are fine for small prints, email or websites. By using more compression, you can store more images.
- **Hot Shoe** – a mounting point on the top of a camera to attach a flash unit
- **RAW files** – collection of unprocessed data. This means the file has not been altered, compressed, or manipulated in any way by the computer. This file type is often used by professional photographers.

## Types of Digital Cameras

Basic Cameras – simple point-and-shoots with just the features needed for routine shots

- **Subcompacts**: small cameras that fit in a pocket, weigh a few ounces, and can be carried everywhere. Most do not have manual controls or viewfinders, but some include a variety of useful features, such as touch-screen LCDs (liquid crystal display). Some have zoom lenses as long as 14x.
- **Compacts**: mainstream compacts are too big for pockets but small enough for most handbags. Many are simple to use and best for everyday events. Some don’t have manual controls for exposure and composition, limiting you to the camera’s assortment of preset scene modes, as with subcompacts.
- **Superzooms**: characterized by a very long zoom range – 15x or greater, which is good for sports, travel, or nature shooting. They are generally bulkier and heavier than compacts and subcompacts. Some models have zooms as great as 30x.

Advanced Cameras – feature-laden models that include sophisticated point-and-shoots and models that let you change lenses.

- **Advanced Point-and Shoots:** these cameras have a non-detachable lens but differ from basic models in that they have lots of manual controls, a hot shoe for an external flash, and support for RAW files. It is the lightest advanced type of digital camera.
- **SLR-likes:** these cameras accept interchangeable lenses but they lack a through-the-lens viewfinder (in fact, most has no viewfinder). They are smaller and lighter than an SLR but usually larger than a point-and-shoot.
- **SLRs:** have the most features, with interchangeable lenses and the largest sensors for the best image quality in low light, and a through-the-lens viewfinder. Controls are extensive. They are also the heaviest, most expensive cameras. Most SLR's are now able to capture HD-resolution video.

### **Digital Cameras Features**

Digital camera features vary greatly model to model. Some might be essential to you, while others might be of use only for highly specialized applications.

- **Exposure modes** – most digital cameras are highly automated with features such as automatic exposure control, which manages the shutter speed and aperture according to the available light. In that mode, the camera generally handles setting ISO and autofocus too. But there are other program modes that allow you to control specific settings, including shutter priority, aperture priority, and special scene modes. Some cameras include full manual controls, which let you set shutter speed and aperture.
- **Zoom lenses** – this type of lens, which is actually made up several different lenses or lens elements, allows you to vary the focal length. That provides you with flexibility in framing shots and closes the distance between you and your subject, which is ideal if you want to quickly switch to a close shot. One common feature of zoom lenses is that they generally protrude from the camera when you turn it on. But some subcompacts and a few compacts and superzooms have non-telescoping lenses.
- **Image Stabilization** – more and more cameras now come with an image stabilizer, a device that compensates for handheld camera shake. Often, the IS device lets you shoot with a slower shutter speed than you otherwise could without producing blur due to hand shake. Image stabilization is something that you should look for, especially if the camera has an optical zoom greater than 3x.
- **Face Detection & Smart Camera features** – feature that attempts to find a face in the image to set focus, exposure, and color balance so that faces appear in focus and well exposed. In some cameras, you have to turn the feature on, in others, it is automatic. Other types of smart features that are starting to be available are smile shutter mode, which shoots a photo of the subject when a subject smiles and blink warnings, alerting you to shots in which a subject might have blinked.
- **Focus** – some cameras automatically adjust the focus of the lens with autofocus features. Most advanced cameras include additional focusing functions. Be sure to look carefully at the types of additional features available on your camera, including manual focus.
- **Shooting Modes** – Most cameras have three options for shooting still images: single image, burst mode, and self-timer. The burst mode allows you to fire off a series of shots quickly, for several, dozens, and sometimes scores of shots. The self-timer mode provides a delay between the moment the shutter button is pressed and the photo is captured.
- **Playback Modes** – all digital cameras can review images on the LCD, along with exposure and other information embedded in the image file. This allows you to quickly see what the image actually looks like, and delete it if you don't like it. Many cameras have automatic orientation features that run the photo vertically or horizontally to correspond to how you shot the photo.
- **LCD Viewers** – displays on cameras that accurately display the image you will get when taking photo. Sometimes these viewers are hard to see in bright sunlight. These LCD viewers have often replaced the optical viewer on many subcompact and compact cameras. A camera with an optical and an LCD viewfinder is more versatile, especially when you shoot in bright light or need to conserve battery power. Also, some point-and-shoot and SLRs include swiveling displays, which are helpful for taking hard-to-reach shots.
- **Flash** – available on almost every digital camera, a flash allows you to illuminate subjects by using a short burst of light. Nearly all have auto-flash modes, a setting that will automatically fire a flash whenever the camera senses there isn't enough illumination for a correct exposure. Most include other flash modes, including red-eye reduction mode.
- **Image File Formats** – the most commonly used file format is the JPEG, a compressed image format that allows

you to use the file for a number of different applications. Advanced point-and-shoots and all SLR-Likes and SLRs can also capture images in a file format commonly known as RAW. RAW files can yield the best quality images and give you the most flexibility when manipulating photos with software.

- **Memory Cards** - Instead of film, nearly all digital cameras record their shots and store them on flash-memory cards. SecureDigital (SD) is the most widely used format. Other memory cards used include Compact Flash (CF), Memory Stick Duo and xD.
- **Connections** – to save images, you transfer them to a computer, typically by connecting the camera to the computer's USB port, or inserting the memory card into a special reader. Cameras can also be connected to printers, or you can insert the memory cards directly into select printers. Most cameras also include a video output that lets you view images on your TV.
- **Video** – Basic point-and-shoots have been able to capture video for many years, but SLRs have only recently included this feature. Most cameras include HD-resolution video, although some still capture standard definition, which may not look as sharp on an HDTV. Some models with HD video quality are good enough to avoid the cost and inconvenience of a separate camcorder. One convenient video feature many cameras now include is a dedicated video button, which lets you quickly record video when you are shooting still images. Also, in you are buying a basic or advanced point-and shoot, check to see whether the camera can zoom while capturing video. Not all models can.

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## **FAST FOOD MEALS**

Fast foods are quick and easy substitutes for home cooking, and a reality with the busy schedules many families maintain. However, fast foods are almost always high in calories, fat, sugar, and salt.

Fast food used to mean fried food. However, today there are many more healthy alternatives available at fast food restaurants. Some restaurants still use hydrogenated vegetable oils for frying. These oils contain trans fats, which increase your risk for heart disease. Some cities have banned or are trying to ban the use of these fats. Now, many restaurants are preparing foods using other types of fat.

Even with these changes, it is hard to eat healthy when you eat out often. Many foods are still cooked with a lot of fat, and many fast-food restaurants do not offer any lower-fat foods. Large portions also make it easy to overeat, and few restaurants offer many fresh fruits and vegetables.

Before heading out, it is important to know your personal calorie limit. Staying within yours can help you get to or maintain a healthy weight. Most adolescents need 1800 (girls) to 2200 (boys) calories; however, knowing how many calories one needs is based upon age, sex, height, weight, and activity level. When choosing what to eat and drink, it's important to get the right mix – enough nutrients, but not too many calories.

In general, eat at places that offer salads, soups, and vegetables. Select a fast-food restaurant that you know offers a variety of food selections that fit in your healthy eating plan. Along with that, the following tips can help you make healthier selections when dining at fast-food restaurants.

Check and compare nutrition information. Knowing the amount of calories, fat, and salt in fast foods can help you eat healthier. Many restaurants now offer information about their food. This information is much like the nutrition labels on the food that you buy. If it is not posted in the restaurant, ask an employee for a copy.

Have it your way. Remember you don't have to settle for what comes with your sandwich or meal – not even at fast-food restaurants. Ask for healthier options and substitutions. Adding bacon, cheese, or mayonnaise will increase the fat and calories. Ask for vegetables instead, such as lettuce or spinach, and tomatoes. With pizza, get less cheese. Also pick low-fat toppings, such as vegetables. You can also dab the pizza with a paper napkin to get rid of a lot of the fat from the cheese.

Keep portion sizes small. If the fast-food restaurant offers several sandwich sizes, pick the smallest. Bypass hamburgers with two or three beef patties, which can pack close to 800 calories and 40 grams of fat. Choose instead a regular- or children's-sized hamburger, which has about 250-300 calories. Ask for extra lettuce, tomatoes, and onions, and omit the cheese and sauce. If a smaller portion is not available, split an item to reduce calories and fat. You can always take some of your food home, and it is okay if you leave extra food on your plate.

Skip the large serving of french fries or onion rings and ask for a small serving instead. This switch alone saves 200 to 300 calories. Or, ask if you can substitute a salad or fruit for the fries.

Strive to make half your plate fruits and vegetables. Take advantage of the healthy side dishes offered at many fast-food restaurants. For example, instead of french fries choose a side salad with low-fat dressing or a baked potato, or add a fruit bowl or a fruit and yogurt option to your meal. Other healthy choices include apple or orange slices, corn on the cob, steamed rice, or baked potato chips.

When choosing an entrée salad, go with grilled chicken, shrimp, or vegetables with fat-free or low-fat dressing on the side, rather than regular salad dressing, which can have 100 to 200 calories per packet. Vinegar or lemon juice are also healthier substitutes for salad dressing. Watch out for high-calorie salads, such as those with deep fried shells or those topped with breaded chicken or other fried toppings. Also skip extras, such as cheese, bacon bits and croutons, which quickly increase your calorie count. If you forgo the dressing, you can find salads for around 300 calories at most fast

food chains.

Opt for grilled items. Fried and breaded foods, such as crispy chicken sandwiches and breaded fish fillets, are high in fat and calories. Select grilled or roasted lean meats – such as turkey or chicken meat, lean ham, or lean roast beef. Look for meat, chicken, and fish that are roasted, grilled, baked, or broiled. Avoid meats that are breaded or fried. If the dish you order comes with a heavy sauce, ask for it on the side and use just a small amount.

Go for whole grains. Select whole-grain breads or bagels. Croissants and biscuits have a lot of fat. People who eat whole grains as part of a healthy diet have a reduced risk of some chronic diseases.

Slow down on sodium. Americans have a taste for salt, but salt plays a role in high blood pressure. Everyone, including kids, should reduce their sodium intake to less than 2,300 milligrams of sodium a day (about 1 tsp of salt). Adults age 51 and older, African Americans of any age, and individuals with high blood pressure, diabetes, or chronic kidney disease should further reduce their sodium intake to 1,500 mg a day.

When eating at a fast food restaurant, pay attention to condiments. Foods like soy sauce, ketchup, pickles, olives, salad dressings, and seasoning packets are high in sodium. Choose low-sodium soy sauce and ketchup. Have a carrot or celery stick instead of olives or pickles. Use only a sprinkling of flavoring packets instead of the entire packet.

Watch what you drink. What you drink is as important as what you eat. Teenagers often drink more carbonated and caffeinated beverages and eat more fast foods. This, along with peer pressure related to eating and exercise, make teenagers particularly vulnerable to becoming sedentary, overweight, and obese. An obese teenager has a greater than 70% risk of becoming an obese adult.

Many beverages are high in calories, contain added sugars and offer little or no nutrients, while others may provide nutrients but too much fat and too many calories. For example, a large regular soda (32 ounces) has about 300 calories. Instead, order diet soda, water, unsweetened iced tea, sparkling water or mineral water. Also, skip the shakes and other ice cream drinks. Large shakes can contain more than 800 calories and all of your saturated fat allotment for the day.

Drink water. This is a better choice over sugary drinks. Regular soda, energy or sports drinks, and other sweet drinks usually contain a lot of added sugar, which provides more calories than needed. Water is usually easy on the wallet. You can save money by drinking water from the tap when eating out. When water just won't do, enjoy the beverage of your choice, but just cut back, avoiding the supersized option.

Don't forget dairy. Many fast food restaurants offer milk as an option for kids' meals, but you can request it! Dairy products provide calcium, vitamin D, potassium, protein, and other nutrients needed for good health throughout life. When you choose milk or milk alternatives, select low-fat or fat-free milk or fortified soymilk. Each type of milk offers the same key nutrients such as calcium, vitamin D, and potassium, but the number of calories are very different. Older children, teens, and adults need 3 cups of milk per day, while children 4 to 8 years old need 2 ½ cups, and children 2 to 3 years old need 2 cups.

The American Heart Association recommends some examples of healthier alternatives to common fast food picks.

Instead of...	Try...
Danish	Small bagel
Jumbo cheeseburger	Grilled chicken, sliced meats or even a regular 2 oz. hamburger on a bun with lettuce, tomato and onion
Fried chicken or tacos	Grilled chicken or salad bar (but watch out for the high-calorie dressing and ingredients)
French fries	Baked potato with vegetables or low-fat or fat-free sour cream topping
Potato chips	Pretzels, baked potato chips
Milkshake	Juice or low-fat or fat-free milk or a diet soft drink (Limit beverages that are high in calories but low in nutrients, such as soft drinks.)

**REFERENCES**

American Heart Association [www.heart.org/HEARTORG/GettingHealthy?nutritionCenter/DiningOut/Tips-for-Eating-Fast-Food\\_UCM\\_308412\\_Article.jsp](http://www.heart.org/HEARTORG/GettingHealthy?nutritionCenter/DiningOut/Tips-for-Eating-Fast-Food_UCM_308412_Article.jsp)

Choose My Plate Nutrition Education Series <http://www.choosemyplate.gov/healthy-eating-tips/ten-tips.html>

- Choose My Plate
- Make Half Your Grains Whole
- Salt and Sodium
- Make Better Beverage choices
- Enjoy Your Food, But Eat Less

Choose My Plate – Calories: How Many Can I Have?

<http://choosemyplate.gov/weight-management-calories/calories/empty-calories-amount.html>

Mayo Clinic

[www.mayoclinic.com/health/fast-food/MY01268](http://www.mayoclinic.com/health/fast-food/MY01268)

National Institutes of Health – Medline Plus

[www.nlm.nih.gov/medlineplus/ency/patientinstructions/000105.htm](http://www.nlm.nih.gov/medlineplus/ency/patientinstructions/000105.htm)

US Department of Health & Human Services - Office on Women's Health

[www.girlshealth.gov/nutrition/fsatfood/fastfood\\_tips.cfm](http://www.girlshealth.gov/nutrition/fsatfood/fastfood_tips.cfm) –

Wright JA, Pepe MS, Seidel KD, Dietz, WH. Predicting obesity in young adulthood from childhood and parental obesity. New England Journal of Medicine 1997; 37 (13): 869-873.

# COOKWARE

Having a hard time choosing the right cookware set for your home? It's not easy. The number of cookware brands seems to be growing every day and the range of pots and pans is enormous with materials varying from stainless steel, cast iron, aluminum and copper. It seems that celebrity chef's and TV Personalities have deemed their cookware the best, but is it? We'll let you decide.

## Key Terms

- **Heat conductivity** – Some metals are better heat conductors than others. For instance, copper is a particularly good heat conductor whereas stainless steel is not. What this means in terms of cookware is that the better the heat conductivity the better and the more evenly your food will cook. It also means that when you turn the heat up or down the copper cookware will react a lot quicker to the temperature change than stainless steel cookware.
- **Price** – The amount you pay for your cookware will most likely be a determining factor in what you end up buying. The rule of thumb with cookware is to buy the best you can afford.
- **Durability** – Some types of cookware will maintain their good looks and last longer than others. Stainless steel is considered to be one of the best in this respect.
- **Reactivity** – Some metals react with certain foods. Aluminum for instance has a tendency to react with tomato and other acidic dishes. This means that your food can actually absorb some of the metal, so take care with your cookware choices and ensure that you are aware of the reactivity of each product.
- **Maintenance** – If you would prefer to not to have to shine your cookware every night just to keep it looking good then you will need to consider the amount of maintenance required to keep it in tip-top shape. Copper and cast iron cookware generally require quite a bit of work to keep it looking pristine whilst stainless steel is normally a little easier to look after.
- **Clad Style Cookware** - cookware made up of two or more different metals.

## Factors To Consider When Purchasing Cookware

- **Consider your cooktop** - Flat-bottomed pans are essential for a smoothtop range. (Nearly every set out there is flat-bottomed, but double-check with a straight edge.) If you have an induction cooktop, magnetic stainless steel is your best bet (bring along a magnet: If it sticks to the bottom, it'll work with an induction cooktop).
- **Choose your pieces** - You'll want an assortment of skillets and pots, a stockpot, and lids. Manufacturers count a lid as a piece, and it might fit more than one piece of cookware in the set. Don't overbuy. A set that contains more pieces might not be the smartest choice if you use only a few and the rest gather dust in your cabinet. And note that utensils and even a cookbook can count as pieces of a set.

Stainless Steel Cookware	Cast Iron Cookware	Aluminum Cookware	Copper Cookware
<p>Stainless steel would have to be the most common type of cookware materials. You will probably find it in most households. Stainless steel is actually an alloy of metals including steel, carbon and chromium. The reason stainless steel is called 'stainless' is because of its ability to resist corrosion. Stainless steel is an excellent choice for cookware BUT because of its inability to conduct heat well it is important that you choose stainless steel cookware that has an aluminum or copper core. Without it you will find that you will get hot spots on the cooking surface and foods will cook unevenly.</p>	<p>Cast iron is a material that has been used to create cookware for hundreds of years. Those that use cast iron cookware absolutely swear by it for its exceptional cooking ability. Nevertheless, cast iron cookware is not an easy to maintain product. It requires a little effort to keep it working the way it should. It is extremely durable and it is not uncommon to find cast iron cookware that has been passed down through the generations.</p>	<p>Aluminum is used in approximately 50% of all cookware manufactured today because of its excellent heat conduction. Aluminum is a soft metal and can scratch and dent easily. It can also react with certain foods which is why it is generally sandwiched between other metals. You will often find stainless steel cookware with a layer of aluminum offering the benefits of both materials. Aluminum is also often treated through a process known as anodization. This process places a layer of aluminum oxide onto the surface making it scratch resistant as well as ensuring that it doesn't react with foods. Aluminum cookware is often finished with a nonstick coating to ensure food remains unburned.</p>	<p>Copper cookware is commonly used amongst professional chefs because of its excellent heat conduction. Copper cookware on its own is generally quite expensive so it is not often seen in many home kitchens. Copper is also often found sandwiched between layers of other materials like stainless steel. Copper cookware is the cookware of chefs and for good reason. It conducts heat extremely well which means it heats quickly and adjusts to changes in temperature just as quickly. This allows greater control over your cooking.</p>
<p><b>Advantages</b>            Relatively inexpensive            Durable            Scratch resistant            Keeps it shiny look for a long time            Doesn't react with foods            Warp resistant</p>	<p><b>Advantages</b>            Relatively inexpensive            Durable            Scratch resistant            Keeps it shiny look for a long time            Doesn't react with foods            Warp resistant</p>	<p><b>Advantages</b>            Excellent heat conduction</p>	<p><b>Advantages</b>            Excellent heat conduction            Relatively expensive</p>
<p><b>Disadvantages</b>            Not a good conductor of heat</p>	<p><b>Disadvantages</b>            Reacts with foods unless seasoned            High maintenance; requires regular seasoning            Is heavier than most other types of cookware            Can rust unless seasoned</p>	<p><b>Disadvantages</b>            Reacts with acidic foods            Scratches and dents easily</p>	<p><b>Disadvantages</b>            Reacts with acidic foods            Requires regular polishing</p>
			

## RESOURCES

<http://whatscookingamerica.net/Information/ChoosingCookware.htm>

<http://www.goodhousekeeping.com/product-reviews/cooking-tools/cookware-reviews/shopping-for-cookware>

<http://www.consumerreports.org/cro/kitchen-cookware.htm>

# OUTDOOR EQUIPMENT

## Tents, Sleeping Bags, and Camp Stoves

In 2011, an estimated 42 million Americans went camping. Those campers spent a staggering 534.9 million days camping! There are many different types of camping experiences, each varying in time, terrain, season, and purpose. Properly preparing for a camping trip is probably one of the most important aspects of making the experience enjoyable. With this many people and time spent in the outdoors, it is important for each person to equip themselves with the best and most appropriate equipment available.

Three essential camping equipment items presented in this study guide are tents, sleeping bags, and camp stoves. With advances in technology over the last century, each item has improved in construction and purpose and is no longer a “one size fits all” product. To ensure a fun camping experience, consumers should become familiar with the many differences in the equipment before making purchases.

### TENTS

A tent is a portable shelter constructed of a fabric and supported by poles, with lines securing the structure to the ground. Today’s tents are built in/for a variety of shapes, seasons, sizes, weights, features, and purposes.

#### *Seasons*

- Three-Season Tents are designed for spring, summer, and fall. These have a variety of ventilation options and are typically made of thinner, less durable material than four-season. It is best used in mild to hot climates.
- Four-Season Tents are built to provide better protection from snowfall and wind. Venting is minimal and the material is tougher than three-season. The season type is a bit misleading in that these tents are really designed for one season, winter. This type of tent may not be suitable for hot climates due to its limited ventilation.

#### *Size and Weight*

One of the biggest factors in selecting a tent is its size. Size is usually quantified by how many people can sleep on the floor. This is typically depicted by a “person” rating. As an example, a tent may be described as capable of sleeping 4 people. Keep in mind, this rating does not take into consideration any gear that may also need to be stored in the tent. An alternative means of determining the best tent size is to estimate the amount of floor space needed by the camper(s) and match that to the floor space (noted by dimensions or square footage on the packaging) of the tent being purchased.

With size also comes weight. Factors that affect weight are the size of the tent itself, the type and amount of material used, and the tent’s features. Weight is an extremely important factor to consider when camping in more remote locations (i.e., backpacking or wilderness camping) and the camper is hauling the gear on foot to the campsite. Weight is less of a factor if the camper is “car camping” (parked close to the campsite) or using a horse or ATV to haul the gear.

#### *Features*

Today’s tents come with a variety of available features that help make your living space more enjoyable and comfortable.

- **Rain fly:** a removable, water-resistant outer wall made of cloth that helps protect the tent from rain. Rain fly’s come in two categories: full-length and partial. Full-length extends almost completely to the floor and provides the most protection. Partial covers the mesh panels at the top of the tent and offers more ventilation than the full-length.
- **Vestibule:** a floorless “porch” usually created by an extension of the rain fly. Its purpose is to provide a semi-protected transition area between the tent and the outdoors. It is often used as an area to remove wet or muddy shoes.
- **Door:** a cloth door panel that is often secured by a zipper. Some tents have multiple doors to allow easier movement in and out of the tent.
- **Poles:** a rod made of aluminum, fiberglass, or carbon fiber that helps provide shape and structure to a tent. Fiberglass poles are found on inexpensive, light-duty tents (cheaper, heavier, and less durable than the other two). Aluminum poles are strong, light, and inexpensive. Carbon fiber poles are found on high-end tents. These are very light and strong, but are the most expensive to replace.
- **Panels/Walls:** the inner cloth canopy that is made up of a solid and/or screened (mesh) material. A solid, waterproof wall can provide protection from rain, but provides less ventilation inside the tent. A screened wall allows for better

airflow in and out of the tent, but does not prevent rain from entering the tent. A hybrid design that uses a mixture of solid and screened material helps reduce condensation inside the tent.

Tent fabrics usually have a waterproof rating associated with its polyurethane-coated fabric. Higher values are associated with better waterproofing capabilities. For example, a rain fly with a rating of 2,500mm is more waterproof than 1,000mm. Keep in mind, the higher the rating (more coating), the heavier the tent will be also.

- **Windows:** typically made of screened (mesh) material; it allows air to flow in and out of the tent while also minimizing entry of insects or other critters
- **Floor:** a fabric component of the tent that is made of more durable material than the walls. The floor must hold up against the weight of its occupants and contact with the ground.
- **Footprint:** a durable material (also called a ground cloth) that is placed under the tent to provide extra protection from abrasion and moisture. A footprint will also help extend the life of the tent.

## **SLEEPING BAGS**

Camping is all about enjoying the great outdoors, but while you're fast asleep in your tent, comfort is probably the number one priority. Having the right sleeping bag can make all the difference in getting a restful sleep. Below are three of the most important factors to consider when purchasing a sleeping bag.

### *Temperature Rating*

The temperature rating indicates the lowest ambient temperature that the average user would still remain comfortable at inside the sleeping bag. For example, a rating of +35°F means that the average person would remain comfortable inside the sleeping bag at 35°F or higher. In selecting the ideal bag, select one that is rated for the coldest temperature expected.

### *Insulation Type*

Most sleeping bags are insulated with either a synthetic polyester fill or goose down.

Type	Advantages	Disadvantages
Synthetic	Insulation when wet Dry fairly fast Easy to clean Less expensive Non-allergenic	Heavier Bulkier Shorter age Doesn't conform to body as well
Down	Warmer ounce for ounce Lightweight Highly Compressible Longer age Wicks moisture	Useless when wet Slow to dry Requires special cleaning May contain allergens More expensive

Source: <http://wildbackpacker.com/gear/sleeping/buyingguide.html>

### *Shape and Size*

The most common shapes (in order of largest capacity to smallest) are rectangle, semi-rectangular, and mummy. Of the three, mummy shapes are smaller and typically lighter weight, ideal for backpacking. To compare sizes when purchasing, check the shoulder and hip girth specifications. Lengths come in "regular" or "long". Long is recommended for individuals 6' 6" or taller.

## **CAMP STOVES**

### *Size and weight*

Camp stoves come in a variety of arrangements, fuel types, and accessories. Stoves can range in weight from a few ounces to several pounds. Select a stove that minimizes weight and volume when backpacking. Be sure to factor in the weight of the stove's fuel. If car-camping, size and weight are less of a factor.

### *Burners*

Stoves are designed with single or multiple burners. Single-burners are best for simple meal preparations such as boiling water, or a single can/pot of food. Multiple burners are ideal when preparing large meals that require more than one burner going at a time. Single-burners weigh less, and are the burner of choice for most backpackers.

### **Fuel Type – Cartridge vs. Liquid Fuel**

- Cartridge Stoves use compressed gasses such as propane, butane, or iso-butane that come in their own container. These are typically lighter in weight, require less maintenance, and burn cleaner. Butane does not perform at temperatures below freezing (32°F). Stoves are sold as a burner that attaches to the top of the cartridge, and the cartridge serves as the stove's base. Canisters cannot be refilled.
- Liquid Gas Stoves have a refillable fuel tank that is typically filled with white gas or kerosene. These stoves work better in cold and windy conditions than cartridge stoves; however, they are more difficult to use and require more maintenance. Liquid fuels are heavier than the compressed gas fuels.

### **RESOURCES:**

- <http://www.outdoorfoundation.org/pdf/research.camping.2012.pdf>
- <http://www.dickssportinggoods.com/info/index.jsp?categoryId=13083851&infoPath=222977>
- <http://www.hoac-bsa.org/Data/Sites/1/media/districts/pioneer-trails/documents/PT%20Tent%20Terminology-Oct10.pdf>
- <http://www.backpacker.com/tent-buying-guide/gear/15054>
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- <http://www.sierratradingpost.com/lp2/tent-guide/>
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# OUTDOOR BACKPACKS

The following is a general guide for which pack sizes (measured in liters) typically work well for backpackers during warm-weather hikes of varying lengths. Colder-weather trips usually require a larger pack, while ultralight backpackers may choose to go smaller than the recommendations here. (For more information, see our Expert Advice article on Ultralight Backpacking.)

Length of trip	Pack capacity (liters)
Weekend (1–3 nights)	35–50
Multiday (3–5 nights)	50–80
Extended (5+ nights)	70+

## Weekend (1–3 nights; 35–50 liters)



Efficient packers using newer, less-bulky gear can really keep things light on 1- to 3-night trips by using a pack in this range. Be aware that packing light requires self-discipline and careful planning. If you can pull it off, though, the light-on-your-feet rewards are fantastic.

## Multiday (3–5 nights; 50–80 liters)



These are the most popular backpacking packs sold at REI, and they're an excellent choice for warm-weather trips lasting 3 or more days. 50–80 liter packs are also used for backcountry skiing, for day trips, overnights and sometimes 2-night trips.

## Extended-trip (5+ nights; 70 liters or larger)



Extended trips of 5 days or more usually call for packs of 70 liters or larger. These are also usually the preferred choice for:

- Winter treks lasting more than 1 night. Larger packs can more comfortably accommodate extra clothing, a warmer sleeping bag and a 4-season tent (which typically includes extra poles).
- Adults taking young children backpacking. Mom and Dad wind up carrying a lot of kids' gear to make the experience enjoyable for their young ones.

## Climbing Packs



REI also carries packs designed primarily as climbing packs. Most have modest capacities that are appropriate only for day trips or overnights. Common features include:

- The ability to strip down the pack to its minimal weight (removing the lid, framesheet and possibly the hipbelt) for use during a summit push.
- A narrower, sleeker, sometimes higher profile than a usual packbag, permitting unencumbered arm movement.
- Several lash-on points for external tool attachment.
- A daisy chain—a length of webbing stitched to the outside of a pack—to provide multiple gear loops for attaching a helmet or tools.
- A reinforced crampon patch (to prevent crampon points from gouging holes in the packbag).
- Gear loops on the hipbelt or low on the pack body, useful as clip-on points for gear or possibly as attachment points for skis.
- Shop REI's selection of backpacks.

## Backpack Fit

Once you've chosen the type of backpack you want, the next step is to work with an REI sales specialist to expertly fit you to your pack.

### The right fit is one that offers:

- A size appropriate for your torso length (not your overall height).

- A comfortably snug grip on your hips.

If you're unable to work with a fit specialist in a store, you can enlist a friend and follow the directions provided in the REI Expert Advice article on Finding Your Torso and Hip Size.

### **Torso Length**

Some packs are available in multiple sizes, from extra small to large, which fit a range of torso lengths. These ranges vary by manufacturer and by gender. Check the product specs tab for size details of a specific pack.

Other packs may feature an adjustable suspension, which can be modified to fit your torso, especially if you're in between sizes. The drawback: An adjustable harness adds a little weight to a pack.

### **Waist Size**

The majority of a backpack's weight, 80% or more, should be supported by your hips.

Backpack hipbelts usually accommodate a wide range of hip sizes, from the mid-20 inches to the mid-40 inches.

People with narrow waists sometimes find they cannot make a standard hipbelt tight enough and need a smaller size. Some packs offer interchangeable hipbelts, making it possible to swap out one size for another.

### **Women-Specific Backpacks**

These are engineered specifically to conform to the female frame. Torso dimensions are generally shorter and narrower than men's packs. And hipbelts and shoulder straps are contoured with the female form in mind.

### **Youth-Specific Backpacks**

These typically offer smaller capacities and include an adjustable suspension to accommodate a child's growth. Women's backpacks, with their smaller frame sizes, often work well for young backpackers of either gender. So do small versions of some men's packs.

### **Additional Backpack Fit Adjustments**

#### **Load lifter straps**

Are stitched into the top of the shoulder straps, and they connect to the top of the pack frame. Ideally, they will form a 45° angle between your shoulder straps and the pack. Kept snug (but not too tight), they prevent the upper portion of a pack from pulling away from your body, which would cause the pack to sag on your lumbar region.

#### **Sternum strap**

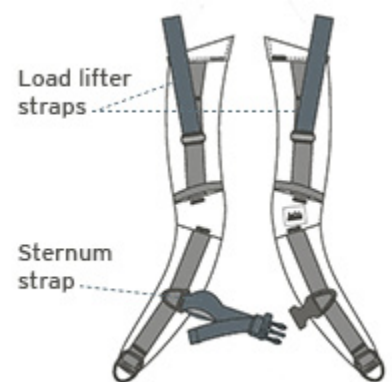
This mid-chest strap allows you to connect your shoulder straps, which can boost your stability. It can be useful to do so when traveling on uneven cross-country terrain where an awkward move could cause your pack to shift abruptly and throw you off-balance.

For tips on pack loading, see the REI Expert Advice article on How to Load a Backpack.

### **Backpack Frame Type**

#### **Internal-frame backpacks**

The majority of packs sold at REI today are body-hugging internal frame packs that are designed to keep a hiker stable on uneven, off-trail terrain. They may incorporate a variety of load-support technologies that all function to transfer the load to the hips.



### **External-frame backpacks**

An external-frame pack may be an appropriate choice if you're carrying a heavy, irregular load. Toting an inflatable kayak to the lake or heading out to the backcountry with surveying tools? An external frame pack will serve you best. External frame packs also offer good ventilation and lots of gear organization options.

### **Frameless backpacks**

Ultralight devotees who like to hike fast and light might choose a frameless pack or a climbing pack where the frame is removable for weight savings.

## **Backpack Features**

### **Main compartment access:**

- Top-loading openings are pretty standard. Items not needed until the end of the day go deep inside.
- Some packs also offer a zippered front panel that folds open exposing the full interior of the pack, or a side zipper, which also makes it easier to reach items deeper in your pack.

### **Sleeping bag compartment**

- This is a zippered stash spot near the bottom of a pack. It's a useful feature if you don't want to use a stuff sack for your sleeping bag. Alternately, this space can hold other gear that you'd like to reach easily.
- Top lid: Many packs offer a zippered top lid where most backpackers store quick-access items: sunscreen, insect repellent, camera, snacks, map. Some lids detach from the main pack and convert into a hipbelt pack for day trips.

## **Pockets**

### **Typical offerings:**

- Elasticized side pockets: They lie flat when empty, but stretch out to hold a water bottle, tent poles or other loose objects.
- Hipbelt pockets: These accommodate small items you want to reach quickly—a smartphone, snacks, packets of energy gel, etc.
- Shovel pockets: These are basically flaps stitched onto the front of a packbag with a buckle closure at the top. Originally intended to hold a snow shovel, they now pop up on many 3-season packs, serving as stash spots for a map, jacket or other loose, lightweight items.
- Front pocket(s): Sometimes added to the exterior of a shovel pocket, these can hold smaller, less bulky items.

## **Ventilation**

This can be a drawback of internal-frame designs. Much of the pack rides on your back, cutting airflow and accelerating sweaty-back syndrome. Designers have addressed this in a variety of ways—ventilation “chimneys” built into back panels, for example.

A few packs have engineered a suspended mesh back panel, sometimes called “tension-mesh suspension.” This is a trampoline-like design where the frame-supported packbag rides along a few inches away from your back, which instead rests against the highly breathable mesh.

## **Padding**

If you're using a lightweight pack with a fairly minimalistic hipbelt and lumbar pad, you can encounter sore spots on your hips and lower back. If this is the case for you, consider using a cushier hipbelt.

## **Attachment points**

If you frequently travel with an ice axe or trekking poles, look for tool loops that allow you to attach them to the exterior of the pack. Rare is the pack that does not offer at least a pair of tool loops.

**Backpack Accessories****Raincover**

Pack fabric interiors are usually treated with a waterproof coating. Yet packs have seams and zippers where water can seep through, and the fabric's exterior absorbs some water weight during a downpour.

The solution is a raincover, which could be a plastic garbage bag (cheap but clumsy) to a more customized packcover. If you expect rain on your trip, this is a good item to carry. An alternative: bundling gear internally in waterproof "dry" stuff sacks. Lightweight dry sacks can be a better option in windy conditions; strong gusts have the potential to abruptly peel a cover right off a pack.

**Hydration reservoir**

Nearly all packs offer an internal sleeve into which you can slip a hydration reservoir (almost always sold separately) plus 1 or 2 "hose portals" through which you can slip the sip tube.

**REFERENCE**

REI, <http://www.rei.com/learn/expert-advice/backpack.html>